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## VIII.

CONTRIBUTIONS FROM THE PHYSICAL LABORATORY OF THE  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

XIII.—ACOUSTIC PHENOMENON NOTICED IN A  
CROOKES' TUBE.

BY PROFESSOR CHAS. R. CROSS.

Presented Nov. 10, 1880.

A SHORT time since, while experimenting with a Crookes' tube, I noticed a phenomenon which was quite striking, and so evident that it hardly seems possible that it has not been observed before, though I have never seen any notice of the fact.

In working with the tube, in which a piece of sheet platinum is rendered incandescent by the concentration upon it of electrified particles repelled from a concave mirror, I noticed that when the mirror was made the negative electrode, so that this concentration took place, a clear and quite musical note issued from the tube. I thought at first that the pitch of this note would coincide with that produced by the circuit-breaker of the coil, which made about 120 breaks per second, but this did not prove to be the case, for very great changes in the rate of the circuit-breaker did not affect the note given by the tube. The effect seemed to be produced by the vibration of the sheet platinum under the influence of the molecular impact, which vibrations were communicated to the glass walls of the tube by the enamelled rod to which the platinum was attached. This gave rise to a sound somewhat resembling that caused by the pattering of rain against a window-pane, but higher in pitch and more musical. The sound changed its character very greatly when the direction of the current was reversed, only a feeble murmur being heard. I obtained a similar musical note, though far less loud, with the "mean free-path" tube, best when the middle plate was positive. With a tube containing phosphorescent sulphide of calcium the note was very dull

in its quality, and low in pitch, but still quite perceptible. With this tube a change in the direction of the current did not affect the note produced. I did not obtain this musical note from any tube that I possess in which the current enters and leaves by a straight wire, except in the case of one Geissler's tube exhausted so as to give stratifications, in which it was very feebly heard.